length from 50 to 80 feet. The walls are hung with deep red or green silk, and the vaulted ceilings are highly enriched with ornaments in relief, finished in white and gold. The series of cabinets or small rooms on the north side correspond in style with the larger ones, and contain the smaller pictures. On the south is the grand corridor or gallery, so celebrated for its decorations, designed by Cornelius, assisted by Zimmerman, and painted by the best artists of Munich. This corridor runs the whole length of the principal suite of rooms, with all of which it communicates. It is divided into twenty-five compartments, and each of them is elaborately decorated with arabesques and paintings, illustrating the life of some eminent painter, or a particular period of art. The windows range on one side of the corridor, and on the opposite walls the panels are decorated. In the centre are painted the arms of cities celebrated for their encouragement of art, and I regret to say none of England are in the list: in the lunettes over these panels are painted the pictures containing the main subjects—to which the smaller pieces on the ceilings and sides bear reference: each ceiling is a dome, with four spandrils, and the linings of the arches between these domes are also filled with highly finished ornamental arabesques. The principal painting in the first compartment is King Louis, surrounded by the most eminent artists of Germany and Italy, and the other subjects illustrate the connection of the arts with religion. In the second is Giovanni Pisano, showing the design for the Campo-Santo at Pisa. On the ceiling are subjects from the crusades. On the third compartment is represented Cimabue's picture of the Madonna carried through the streets of Florence. On the fourth are incidents in the life of Giotto; and so on through the twenty-five compartments, which, while giving subjects in the lives of the most celebrated painters, illustrate the progress of the art itself.

The pictures in these ceilings are, I believe, painted in fresco, the ornaments in encaustic: the colouring is harmonious, rich, and beautifully contrasted.

I thought the decorations of the arches and the pilasters by no means equal in effect to the ceilings. The grounds are too bright, or at any rate the colouring of the arabesques have a washy appearance far from satisfactory. The designs, too, of the pilasters are somewhat clumsy.

LUDWIG'S KIRCHE,

or church of St. Louis, erected about twelve years ago; is in the Romanesque style, from the designs of Professor Von Gartner. It has a nave, aisles, transept, and choir; is of considerable size, and of elegant proportion.

The decoration of this church is different from any I have seen, from the neutral quality of the colouring employed. The grand fresco by Cornelius of the "Last Judgment" fills the entire wall at the end of the choir, being upwards of 60 feet high. The colours of this fine painting partake very much of ochery red and yellow, and it seemed to me that the decoration of the church had been calculated with reference to this fresco.

The general tone of the walls is a neutral fawn colour, and in the arches this with dull lilac are the principal tints employed, relieved by small portions of red. The arches near the wall have stronger colouring: here a geometrical pattern of green and red marks distinctly the form of arch, and on the face is an agreeable arrangement of white ornament on a chocolate ground bordered by green, separated by interlacings of blue and red. In the south transept, the arch is subdivided into compartments: in the principal one is a fine fresco of the crucifixion by Hesse: on the side panels are arabesques of a subdued character, and above are figures on a gold ground. The lower parts of the walls are mostly stencilled in geometrical patterns. The ceiling is vaulted and divided by intersecting rib mouldings, painted red, violet, and gold, with side margins in the neutral lilac and fawn. The ground of the ceiling is blue, studded with gold stars.

The most beautiful parts of the decoration of this church are the dome ceilings of the aisles: there are three of these on each side, and though perhaps to be criticised as to the particular style, yet they are very curious and elegant specimens of polychrome.

The floor of this church is laid with marble.

THE ALLER-HEILIGEN CAPELLE,

or Chapel of All Saints, is a building in the Byzantine style, by Leo Von Klense.

The interior is magnificent; the whole of the ceiling and upper part of the wall being gilt, and almost covered with paintings. The general effect reminded me of the Duomo, at Venice. Though gorgeous, it has an air of solemnity and grandeur.

The ceiling is divided into two parts, in each of which rises a grand dome: in the one are painted subjects from the Old Testament, the Creator being in the centre: in the other is the Redeemer, surrounded by angels and the twelve apostles. In the spandrils of the arches are figures of the four patriarchs and the four Evangelists. The arch between the domes contains subjects connected with the Nativity, &c.: that over the altar has paintings representing the seven sacraments, surrounded by beautiful arabesques on a gold ground; and in that over the music gallery at the west end, are subjects of St. Cecilia, David, Isaiah, St. Luke, &c., also surrounded by ornaments.

The walls on the side have an arched form, and are painted with subjects of the sacrifice of Isaac, the crucifixion, &c. The choir terminates in an apse, on which is painted the figure of Christ surrounded by angels, and surmounted by the Father and the Holy Spirit: below is the blessed Virgin on a throne: beside her are St. Peter and St. Paul, Moses and Isaiah.

All these paintings are by Professor Hesse and his assistants, and are too well known to require from me any eulogy upon them. Framing these noble paintings, and forming the lining of the arches, is the ornament shown in my sketch: it is repeated as a bordering on every arch, and is the principal decorative ornament on the upper part of the chapel. It has a very beautiful effect, and contrasts and harmonises well with the gold grounds. The panels of the piers which support the arches are filled with rich Mosaic, which is introduced also in other parts unoccupied by paintings.

The columns supporting the galleries on each side of the chapel are of red marble, the capitals being gilt: the ground above these arches is covered with painted arabesque on a gold ground. The circles are the only ornaments in relief: the mouldings of the arches, and the cornice above, owe their effect simply to the contrasts of colour.

The floor of this beautiful chapel is inlaid with marble of various colours.*

JOHN G. CRACE.

PAINE'S WATER-GAS FOR LIGHT, HEAT, AND OPERATIVE FORCE.

SINCE Franklin drew the lightning down from the thunder clouds of heaven, as a virtual initiative to all those scientific wonders of which electricity has since been the fruitful source, no subsequent discovery can boast of the importance that must now be conceded to that of another American, *should the result of his present pretensions prove to be as well founded as they now appear to be.* Foreseeing the probability of such a result, in July last, while venturing to anticipate a fact not then revealed, and offering a few hints to experimental electricians, the precision and importance of which the upshot, as we shall show, now singularly elucidates, we remarked that "a word to the wise in time may save us, at least, if not the Americans, from the private appropriation of so great and universal an idea under *patent* lock and key." These hints we hope the wise have not deemed themselves too wise to act upon; for the subject of them has already proved itself to be possessed of too tenacious and unephemeral a vitality to have been *nothing more* than a mere "nine days' wonder." Mr. Paine's main interest in his American patent has been sold, it is alleged, for more than a million sterling (?); the shares of the company to whom it was sold are at a high premium; the States are rapidly purchasing licenses to begin; and, lastly, the dreaded patent to prevent us from having the free use of a power which has such highly feasible pretensions to be one of immense and universal interest and importance, not only in the production of light and heat, but of motive power inclusive,—has already been secured,—at least until disputed, if it effectually can be so: and, considering the profit already derived by the original patentee, and the fair field already occupied in America by his assignees, we can see no injustice in an earnest hope that they may have their patent here effectually disputed. Failing any successful attempt amongst our own more able electricians, however, to forestall such a patent, it may be a question whether the date or circumstances of an alleged realisation of the same idea in France before the British patent was secured, can be brought successfully to bear upon the latter.

The evidence in favour of Mr. Paine's pretensions is now very strong. The editor of the *Boston Chronotype* says:—

"What we have seen enables us to state, not only that Mr. Paine has extorted from nature the secret of the artificial production of light at a nominal cost, but that he has got hold of the key which unlocks and enables him to command a new force of nature, which is soon to supersede most of the forces now employed—something which is destined to work a revolution both in science and art."

And, in allusion to the *report* by certain engineers, which was believed, both here and in America (but not by us,—see vol. viii., pp. 440 and 566,—though just as wide awake to Yankee long bows as our neighbours), to have completely extinguished these pretensions, the editor adds:—

"*We have seen for ourselves, and find that we have done Mr. Paine very great, though not intentional, injustice.* And we can hardly find words to express our surprise at the scientific report which was partly the cause of our doing so. The demonstration which Mr. Paine then presented could not have been of a doubtful character to *chemical* eyes. These gentlemen must have understood and believed more than they reported."

According to the *Patent Journal*,

"Mr. Paine claims, among other things, to have discovered a means of increasing the power of a magneto-electric machine to such an extent that he can decompose water rapidly with it; that he can take a jar of water, and, by means of the electricity induced by this machine, can convert *the whole of it into hydrogen gas*, without the production of any *oxygen* whatever. He claims, also, that *by changing the electrical poles* he can convert *the whole of the jar of water into oxygen gas*, without producing any *hydrogen*: that, after producing the hydrogen, as above, and passing it through spirits of turpentine, it becomes *carburized*, and then will burn with a clear and brilliant flame, and this, too, without any loss to the turpentine by the passage of the gas through it. In regard to LIGHT, independent of the other applications of the power, Mr. Paine claims to have discovered a means of producing it from water, by electricity, at a cost infinitely less than any mode now in operation."

As to this "changing the electrical poles," we must here further explain that it now appears that when hydrogen is wanted the *negative* wire must be made continuous and free to act, while the *positive* is *interrupted* by means of a small glass of water, into which the broken or separate sections of that wire are dipped without contact. On the contrary, when oxygen alone is required, the *positive* wire must be continuous, and the *negative* interrupted. When both oxygen and hydrogen are to be eliminated, as in the ordinary magneto-electric machine, both wires must be continuous or neither interrupted.

"I asked Mr. Paine," says the writer of the article just quoted, "why he interrupted the *positive pole* by the glass of water?—why he cut this wire in two, and placed the ends in the glass of water? He said that, unless this were done, *both hydrogen and oxygen* would be generated in the bell glass; but that by this means he only obtained the hydrogen. There appeared to be no oxygen generated by the operation." "According to Mr. Paine," says Dr. Foster, in the *Scientific American*, "oxygen is composed of one gas and *positive* electricity, and the

* To be continued.